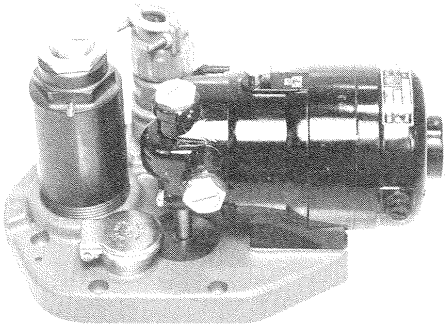
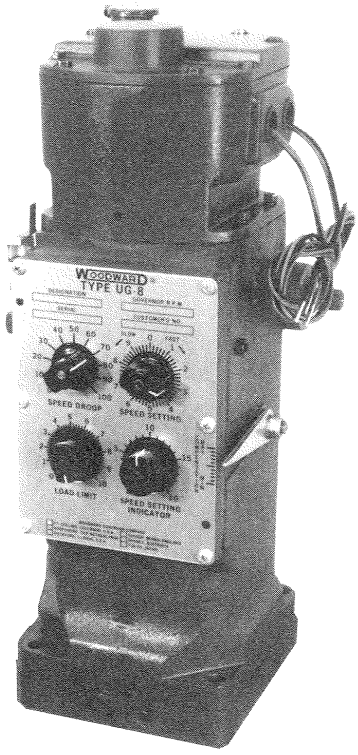
WOODWARD

Shutdown Solenoid for UG Governor





Installation and Operation Manual

Manual 03013T

WARNING

Read this entire manual and all other publications pertaining to the work to be performed before installing, operating, or servicing this equipment. Practice all plant and safety instructions and precautions. Failure to follow instructions can cause personal injury and/or property damage.

The engine, turbine, or other type of prime mover should be equipped with an overspeed (overtemperature, or overpressure, where applicable) shutdown device(s), that operates totally independently of the prime mover control device(s) to protect against runaway or damage to the engine, turbine, or other type of prime mover with possible personal injury or loss of life should the mechanical-hydraulic governor(s) or electric control(s), the actuator(s), fuel control(s), the driving mechanism(s), the linkage(s), or the controlled device(s) fail.

WARNING

This shutdown solenoid must not be used for overspeed shutdown because overspeed could be caused by failure of the governor system. The shutdown could be made inoperable by the same governor failure which caused the overspeed. Engine overspeed can cause property damage, personal injury, and death. Use the shutdown only for protection from low oil pressure, high oil pressure, water temperature, or other system protection.

IMPORTANT DEFINITIONS

WARNING—indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION—indicates a potentially hazardous situation which, if not avoided, could result in damage to equipment.

NOTE—provides other helpful information that does not fall under the warning or caution categories.

Revisions—Text changes are indicated by a black line alongside the text.

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Chapter 1.
Operation and Adjustment

Description

A shutdown solenoid is available for use on dial type UG8, UG32, and UG40 governors. Two basic models are available. One will cause shutdown when energized, and the other will cause shutdown when de-energized.

Vibration-resistant models are available for both styles.

The energize and de-energize models are available with a latch that requires manual resetting for restarting the engine. Vibration-resistant models are not built with the latching feature.

WARNING

The shutdown solenoid must not be used as an overspeed protection device. Overspeed protection must come from a unit entirely separate from the UG governor. Failure of a governor or governor-related part of the system control can cause a life- or engine-threatening overspeed condition. In these cases, it is possible that the shutdown solenoid could not stop the runaway condition.

If voltage is available, the engine may be started without manual reset of the solenoid if the solenoid with latch is of the energize-to-run type.

All shutdown solenoids move the load-limit strap down to effect shutdown.

The solenoid can be supplied with various coils to accommodate the more common dc voltages. If operation on ac is desired, rectifiers can be incorporated in the cover assembly to rectify either 110 or 220 volts to dc. In addition, other ac voltages can be adapted on special order.

The special governor cover, required for mounting the unit, is available with or without accommodations for a speed-adjusting motor.

Operation

De-energize to Shut Down Model

The de-energize to shut down models shown in Figures 1 and 2 will shut the engine down on loss of current to the solenoid. The solenoid plunger moves up to allow the engine to run. To start an engine when no current is available, lift the solenoid plunger manually by means of the shutdown-latch knob (see Figure 1). As it approaches the top of its stroke, the lock pin may be pressed in to latch the shutdown-latch knob just below its upper position. This permits starting and running the engine. ***Operating with the latch pin holding the solenoid at the top of its stroke eliminates the possibility of using the solenoid to shut down the engine.***

When current is applied to the solenoid, it will move to its full upward position, unloading the lock pin, which is moved outward by the circular latch spring. With loss of current, the load spring will cause the solenoid plunger to move down, lifting the governor pilot valve and closing off fuel.

WARNING
During start-up, if for any reason the solenoid has no current and the lock-in is latched, the solenoid will be inoperative. This will eliminate any safety systems which may use the solenoid to shut down the engine.

A de-energize to shut down model can be supplied without the latching feature, generally for operation in automatic plants. The vibration-resistant de-energize to shut down model is available only in non-latching design. The non-latching solenoids present an “energize to run” limitation on the engine, a condition which is required in many plants.

Energize to Shut Down Model

The energize to shut down model shown in Figures 3 and 4 will shut the engine down as current is applied (even momentarily in the case of the latching model).

The solenoid plunger moves downward through a tapered plunger stop, which contains seven spring-loaded steel balls. The binding action of the steel balls against the shutdown rod prevents the solenoid from returning. To restart the engine, return the plunger to its original position by pressing the reset button, which forces the steel balls away from the plunger and allows the spring force to push the load-limit strap and the solenoid plunger to the uppermost positions.

The energize to shut down system is available in non-latching designs for both the regular and the vibration-resistant models. The vibration-resistant model is not available in the latching mode.

The non-latching model requires a “shutdown current” to the solenoid until shutdown is complete.

Adjustments—Installation

Solenoid shutdown devices supplied on governors as original equipment are adjusted at the factory. It will be necessary to make the following adjustments on units which are to be installed on governors already in service.

CAUTION
When assembling or adjusting a shutdown solenoid, ALWAYS remove the cover and do the work away from the governor. IF ANY PART OF THE SOLENOID DEVICE SHOULD DROP INTO THE GOVERNOR, IT WILL REQUIRE EXTENSIVE DISASSEMBLY OF THE GOVERNOR.

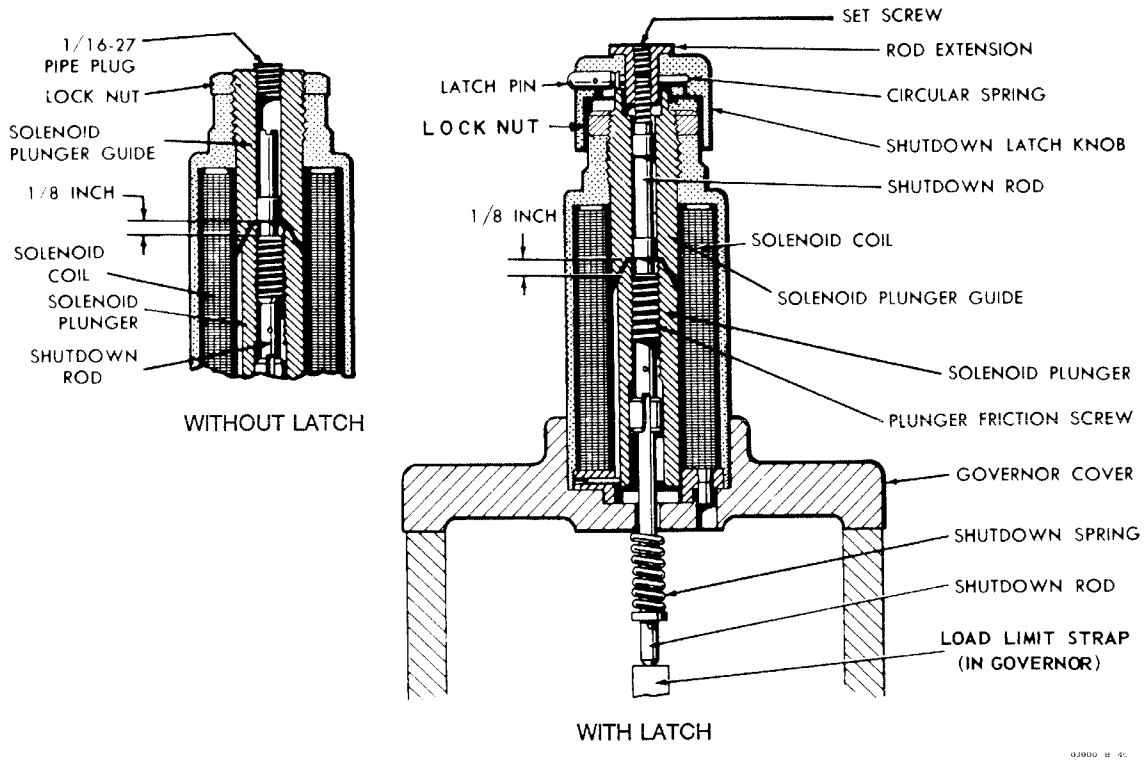

Figure 1. De-Energize to Shut Down Models

De-Energize to Shut Down Model

1. Position the shutdown rod assembly in the solenoid plunger with the end of the plunger friction screw 3 mm (1/8 inch) inside the solenoid plunger nose as shown in Figure 1. This adjustment is necessary only when the shutdown device has been disassembled for cleaning or replacing parts. New assemblies sent from the factory will have this adjustment completed.

2. Loosen the lock nut and, with the solenoid de-energized, turn the solenoid plunger guide clockwise until it is tight against the plunger. The plunger should now be seated against the governor cover. Back off the solenoid plunger guide 3 to 4 turns and tighten the lock nut.

3. Attach the cover assembly (including the shutdown device) to the governor case.

4. Remove the set screw from the hole in the rod extension. With the engine running and the governor in operation and controlling the speed, de-energize the solenoid and use a screwdriver to turn the shutdown rod assembly clockwise until the governor just starts to shut down, then screw the shutdown rod down one additional turn.

Steps 5, 6, and 7 pertain to the latching model. Skip to step 8 if adjusting a non-latching model.

5. De-energize the solenoid. Lift the shutdown latch knob and press in the latch pin so the pin remains engaged when the knob is released.

6. With a screwdriver in the slot of the shutdown rod to prevent it from turning, screw the rod extension clockwise until the solenoid plunger is pulled up against the solenoid plunger guide.

7. Energize the solenoid. Back off the rod extension until the latch pin releases. Then back off 1/4 turn more. Lock in place with the 10-32 set screw.

8. Check for normal operation with the solenoid energized and for shutdown when the solenoid is de-energized. Check the latching device to verify that it will latch up to allow starting and unlatch when the solenoid is energized.

Vibration-Resistant De-Energize to Shut Down Model

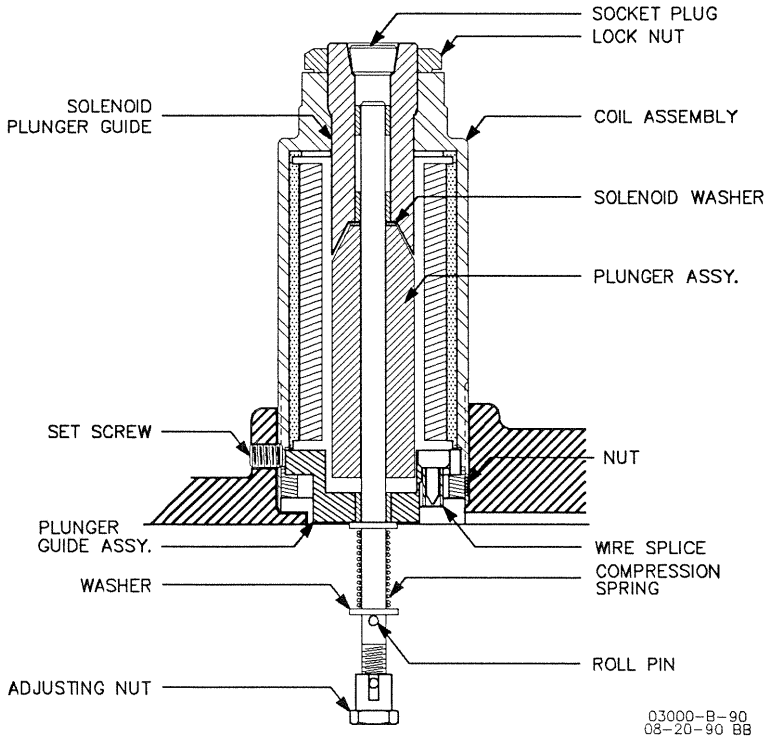

Figure 2. Vibration-Resistant De-energize to Shut Down

1. Install the shutdown solenoid in the cover with the Plunger Guide Assembly slightly below the surface of the inside of the cover. Thread the adjusting nut onto the solenoid plunger rod as far as it will go. DO NOT LOCK WITH THE ROLL PIN AT THIS TIME.

2. Turn the solenoid plunger guide down until the rod just moves a little farther out of the bottom of the solenoid assembly. Then back off the plunger guide four full turns and lock with the lock nut.

3. With the engine running and the governor controlling engine speed, place the cover and gasket on the governor. If the engine does not shut down, remove the cover, screw the adjusting nut out one full turn, and replace the cover assembly on the governor.

4. Continue this procedure until the engine shuts down when then the cover is placed on the governor.

CAUTION

Completely remove the cover from the governor and make the adjustments in the adjusting nut away from the governor to prevent accidentally dropping the adjusting nut into the operating governor. Extensive damage to the governor can occur should the nut drop off the end of the shaft. Should the adjusting nut thread out more than 5 turns before causing shutdown, loosen the set screw and thread the entire shutdown solenoid farther into the governor cover, then start the adjusting nut setting again.

5. When the governor shuts the engine down when the cover is placed on the governor, remove the cover a final time and thread the adjusting nut until the roll pin can be pressed into the shaft, locking the adjusting nut into place. Do not risk dropping the roll pin into the governor while making this final installation.

6. Complete the wiring to the plug on the cover and check that the application of the required voltage causes the plunger to retract.

7. Install the cover-solenoid assembly onto the governor and check that the engine shuts down when the solenoid is de-energized, and that the engine can start and run with the solenoid energized. Check for normal operation with the solenoid de-energized, making sure that the governor is not sluggish in adding fuel to pick up load.

   If the governor is sluggish in adding fuel to pick up load, check for excessive drag in the movement of the solenoid plunger, a misaligned shutdown rod, a bent plunger guide, or solidified preservative lubricant on any of the moving parts.

Energize to Shut Down Model

1. Position the shutdown rod assembly in the solenoid plunger with the end of the plunger friction screw 3 mm (1/8 inch) inside the plunger nose as shown in Figure 2. This adjustment is necessary only when the shutdown device has been disassembled for cleaning or replacing parts. New assemblies from the factory will have this adjustment completed.

2. Attach the cover assembly (including the shutdown device) to the governor case.

3. Unscrew the knurled reset button retainer and remove the reset button and spring. Loosen the lock nut. Turn the plunger stop down until the solenoid plunger is tight against the solenoid plunger guide. Back off 3 to 4 turns. Tighten the lock nut.

4. With the governor in operation and controlling engine speed, energize the solenoid and turn the slotted shutdown rod clockwise until shutdown occurs. Turn clockwise one more turn past the point of shutdown, and install the spring, reset button, and reset button retainer.

5. Check for normal operation with the solenoid de-energized, making sure that the governor is not sluggish in adding fuel to pick up load.

6. Energize the solenoid. After shutdown, check to see that the governor remains inoperative until the latch is released by pressing the reset button. Recheck for normal operation.

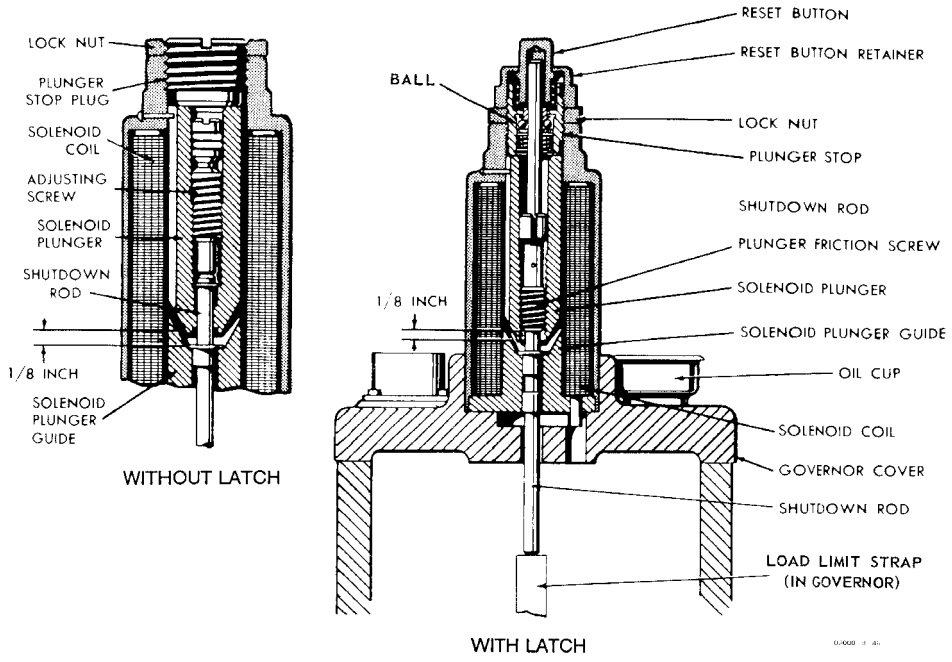

Figure 3. Energize to Shut Down Models

The energize to shut down model without the latching feature is adjusted in the following manner: Remove the plunger stop plug and, with the unit running, energize the solenoid. With the governor in operation and controlling speed, turn the slotted shutdown rod clockwise until shutdown occurs. Turn clockwise one more turn past the point of shutdown. Replace the plunger stop plug and screw it down until the solenoid plunger is tight against the solenoid plunger guide. Back off 3 to 4 turns on UG5.7, UG8, and UG12.8 governors or 4 turns on UG32 or UG40 governors. Lock in place with the lock nut. Make the final check as described in steps 5 and 6 above.

Vibration-Resistant Energize to Shut Down Model, without Latch

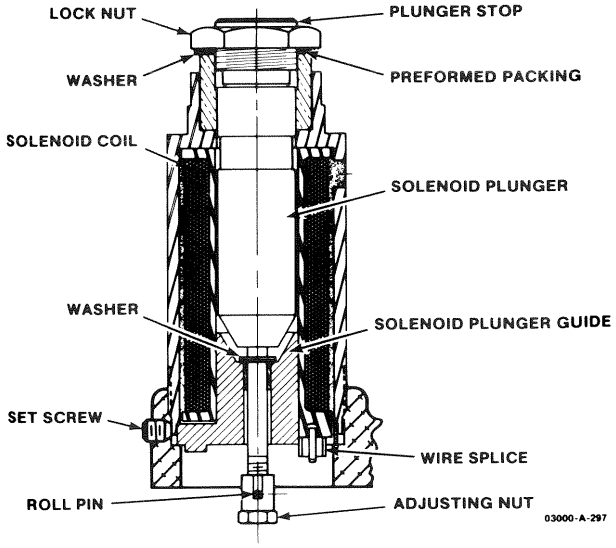

Figure 4. Vibration-Resistant Energize to Shut Down, without Latch

1. With the governor controlling and the governor cover removed: Loosen the locknut. Turn the plunger stop all the way in to immobilize the plunger, and run the adjusting nut all the way in to secure a starting position.

2. Install the cover and gasket on the governor.

CAUTION

Completely remove the cover from the governor and make the adjustments in the adjusting nut away from the governor to prevent accidentally dropping the adjusting nut into the operating governor. Extensive damage to the governor can occur should the nut drop off the end of the shaft. Should the adjusting nut thread out more than 5 turns before causing shutdown, loosen the set screw and thread the entire shutdown solenoid farther into the governor cover, then start the adjusting nut setting again.

3. With the engine running and the governor controlling engine speed, place the cover and gasket on the governor. If the engine does not shut down, remove the cover, screw the adjusting nut out one full turn, and replace the cover assembly on the governor.

4. Continue this procedure until the engine shuts down when then the cover is placed on the governor.

5. When the governor shuts the engine down when the cover is placed on the governor, remove the cover a final time and thread the adjusting nut until the roll pin can be pressed into the shaft, locking the adjusting nut into place. Do not risk dropping the roll pin into the governor while making this final installation.

6. Back out the plunger stop four turns and lock in place with the lock nut.

7. Complete the wiring to the plug on the cover and check that the application of the required voltage causes the plunger to extend from the solenoid.

8. Install the cover-solenoid assembly onto the governor and check that the engine shuts down when the solenoid is energized, and that the engine can start and run with the solenoid de-energized. Check for normal operation with the solenoid energized, making sure that the governor is not sluggish in adding fuel to pick up load. If the governor is sluggish in adding fuel to pick up load, check for excessive drag in the movement of the solenoid plunger, a misaligned shutdown rod, a bent plunger guide, or solidified preservative lubricant on any of the moving parts.

Solenoid Suppression Diodes

Solenoid coils used by Woodward, whether operated on ac or dc, have two diodes wired in the circuit as shown in Figure 5.

Diodes rectify ac to supply dc to the solenoid coils and also to provide shock hazard protection when used on ac when the ac is disconnected at the peak of a cycle (counter EMF is generated when the power is removed from the coil).

The diodes should be used on dc power solenoid coils because of the counter EMF.

NOTE
Open or shorted diodes impair operation of the shutdown solenoid.

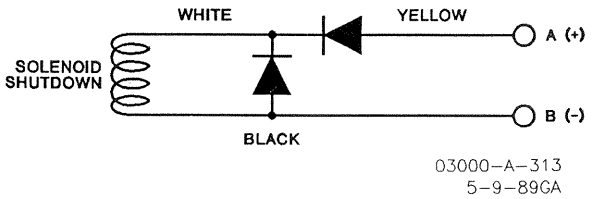

Figure 5. Solenoid Suppression Diode

Chapter 2.
Parts Lists

Parts Information

When ordering replacement parts, include the following information:
1. Governor serial number and part number shown on the nameplate.
2. Manual number (this is manual 03013).
3. Part reference number and part name from parts list.

CAUTION
Damage may result if any parts are allowed to drop into the governor. Use extreme caution when working on the shutdown solenoid. Any part that should drop into the governor must be retrieved before attempting to operate the governor.

Ref.	Part Description	Quantity
03013-1	Cable Clamp	1
03013-2	Plug	1
03013-3	Screw, 4-40 x 5/16" Fil Hd	4
03013-4	Receptacle	1
03013-5	Cover	1
03013-6	Set Screw, 10-32 x 1/4"	1
03013-7	Screw, 10-32 x 3/4" Fil Hd	4
03013-8	Split Lock Washer, No. 10	4
03013-9	Grommet	1
03013-10	Motor Seal Spring	1
03013-11	Oil Cup	1
03013-12	Bodine Motor	1
03013-13	Solenoid Case	1
03013-14	Load Spring	1
03013-15	Insulating Paper	1
03013-16	Solenoid Coil	1
03013-17	Parallel Connector	2
03013-18	Wire, White Flamenol O.D.	AR
03013-19	Wire Strap, 2 Wires	2
03013-20	Screw, Fil Hd 8-32 x 1/4"	2
03013-21	Clear Tubing 3/4" Long	2
03013-22	Air Gap Washer	1
03013-23	Solenoid Plunger	1
03013-24	Solenoid Plunger Locking Pin	1
03013-25	Not Used	
03013-26	Solenoid Plunger Guide	1
03013-27	Shutdown Spring	1
03013-28	Washer, Shutdown Spring Ret.	1
03013-29	Roll Pin, 1/16" x 1/4"	1
03013-30	Plunger Friction Screw	1
03013-31	Shutdown Rod	1
03013-32	Roll Pin	1
03013-33	Plunger Guide Bushing	2
03013-34	Solenoid Plunger Guide	1
03013-35	Latch Spring	1
03013-36	Snap Ring	1
03013-37	Shutdown Latch Knob	1
03013-38	Lock Pin	1
03013-39	Rod Extension	1
03013-40	Lock Wire	AR
03013-41	1/16 Pipe Plug	1
03013-42	Jam Nut	1
03013-43	Solenoid Plunger Guide	1
03013-44	Shutdown Rod	1
03013-45	Solenoid Case	1
03013-46	Solenoid Plunger Guide	1
03013-50	Ball Loading Spring	1
03013-51	Washer	1
03013-52	Latch Spring	1
03013-53	Shutdown Push Button	1
03013-54	Push button Retainer	1
03013-55	Plunger Stop Plug	1
03013-56	O Ring	2
03013-57	Adjusting Screw	1
03013-58	Snap Ring	1
03013-59	Shutdown Rod	1
03013-60	Solenoid Plunger	1
03013-61	Soldering Shield Washer	2
03013-62	Varnished Tubing 3/16" long	2
03013-63	Shutdown Rod	1
03013-64	Latch Rod	1
03013-65	Snap Ring	1
03013-66	Washer Assembly	1
03013-67	Ball	7
03013-68	Bushing, Ball Release	1
03013-69	Plunger Stop	1
03013-70	Diodes (Figure 4) (not shown in parts breakdown)	2
03013-71	Plunger Stop Assembly	1
03013-72	O-Ring, .739" ID x .070"	1
03013-73	Washer, .875" x 1.125" x .047"	1
03013-74	Plunger Assembly	1
03013-75	Roll Pin, .062" Dia. x .312", S.S.	1
03013-76	Solenoid Coil Assembly	1
03013-77	Solenoid Plunger Guide Assm.	1
03013-78	Adjusting Nut	1
03013-79	Not Used	
03013-80	Not Used	

Ref.	Part Description	Quantity
03013-81	Socket Plug	1
03013-82	Lock Nut	1
03013-83	Solenoid Plunger Guide	1
03013-87	Coil Assembly	1
03013-85	Plunger Guide Assembly	1
03013-86	Wire Splice	2
03013-87	Solenoid Nut	1
03013-88	Solenoid Washer	1
03013-89	Plunger Assembly	1
03013-90	Roll Pin	2
03013-91	Spring	1
03013-92	Spring Seat Washer	2
03013-93	Adjusting Nut	1
03013-121	Motor Housing	1
03013-122	Soc. Hd. Cap Screw, 10-32	8
03013-123	Lock Washer, #10	8
03013-124	Cable Assembly	1
03013-125	Potting Stop	1
03013-126	Wire Protector Bushing	2
03013-127	Potting Stop	1

Ref.	Part Description	Quantity
03013-128	Cable Assembly	1
03013-129	Motor Gasket	1
03013-130	Motor	1
03013-131	Lock Washer, No. 6	4
03013-132	Cap Screw, 0.312-18 x 0.875	4
03013-133	Resistor Assembly	2
03013-134	Shakeproof Washer #4	2
03013-135	Soc. Hd. Screw, 4-40 x 0.750	2
03013-136	Gasket	1
03013-137	Cover	1
03013-138	Oil Cup	1
03013-139	Screw	4
03013-140	Screw, 10	4
03013-141	Pressure Pad	1
03013-142	Printed Circuit Board	1
03013-143	Housing Gasket	1
03013-144	Cable Assembly	1
03013-145	Grommet	2
03013-146	Plug	1
03013-147	Wiring Harness	1

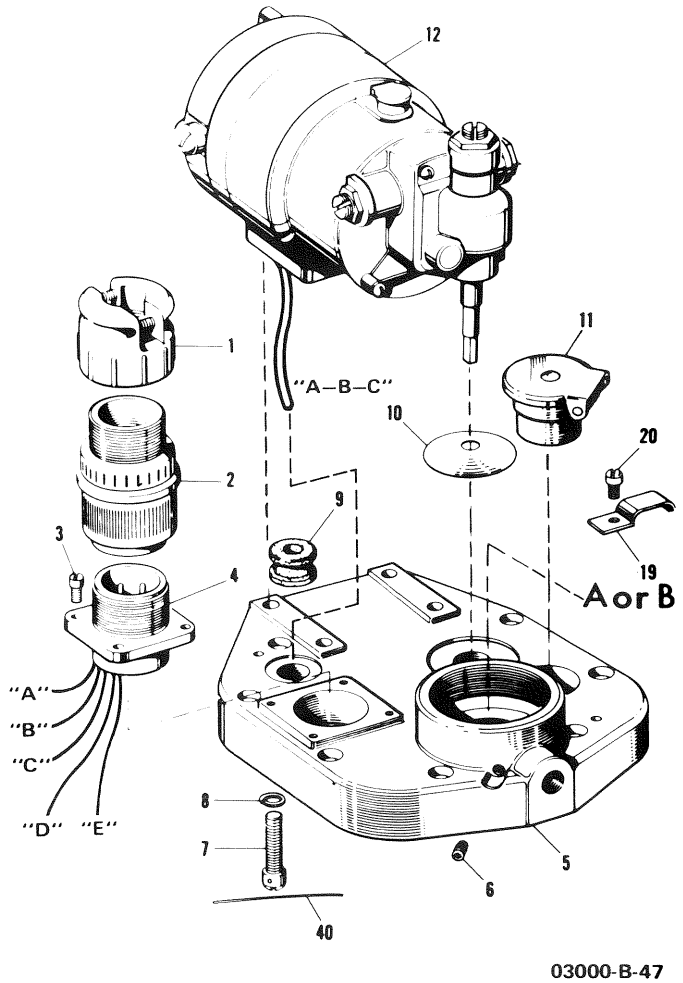

Figure 6. Cover Assembly (with speed setting motor)

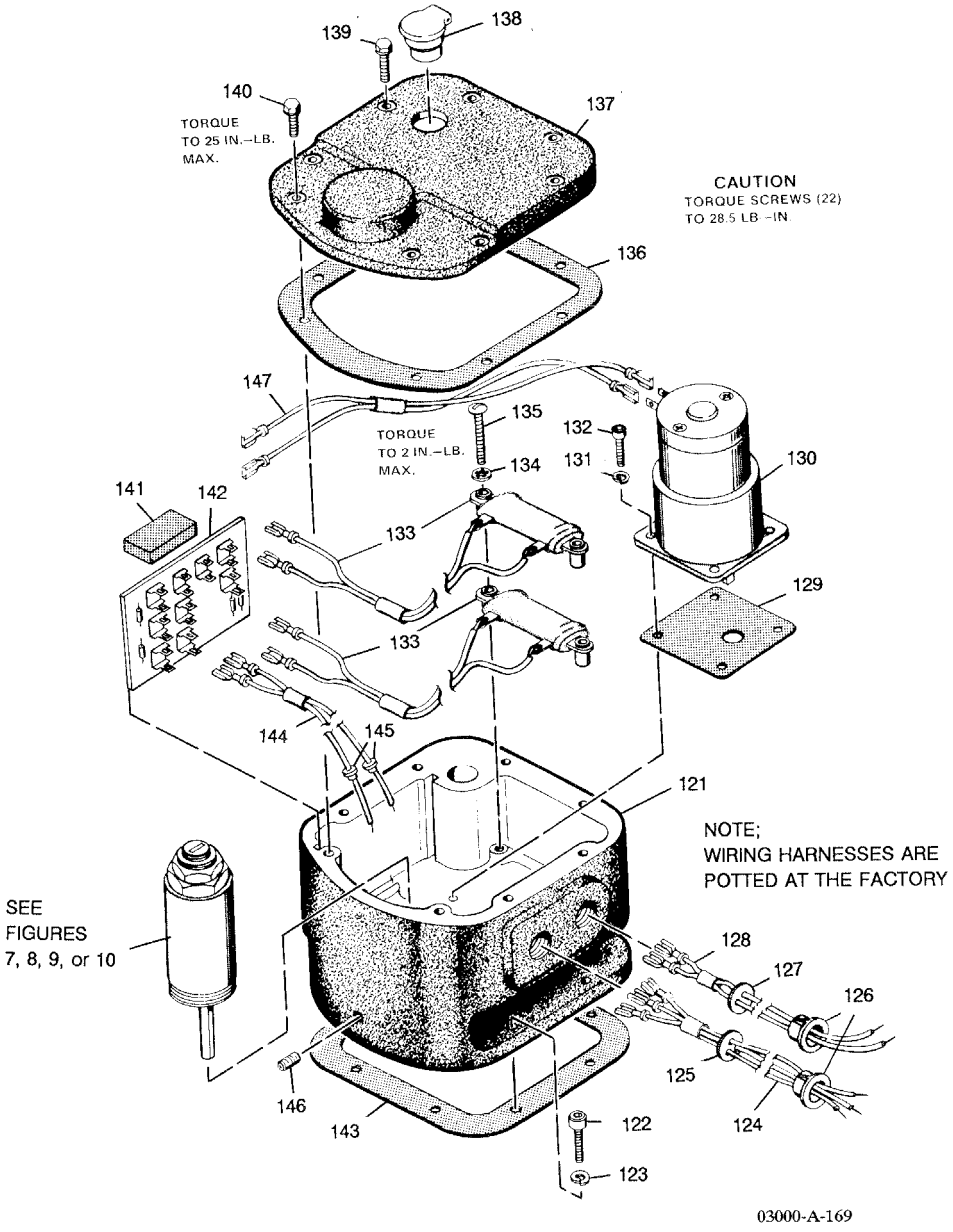

Figure 6a. PM Motor Assembly (see manual 03035)

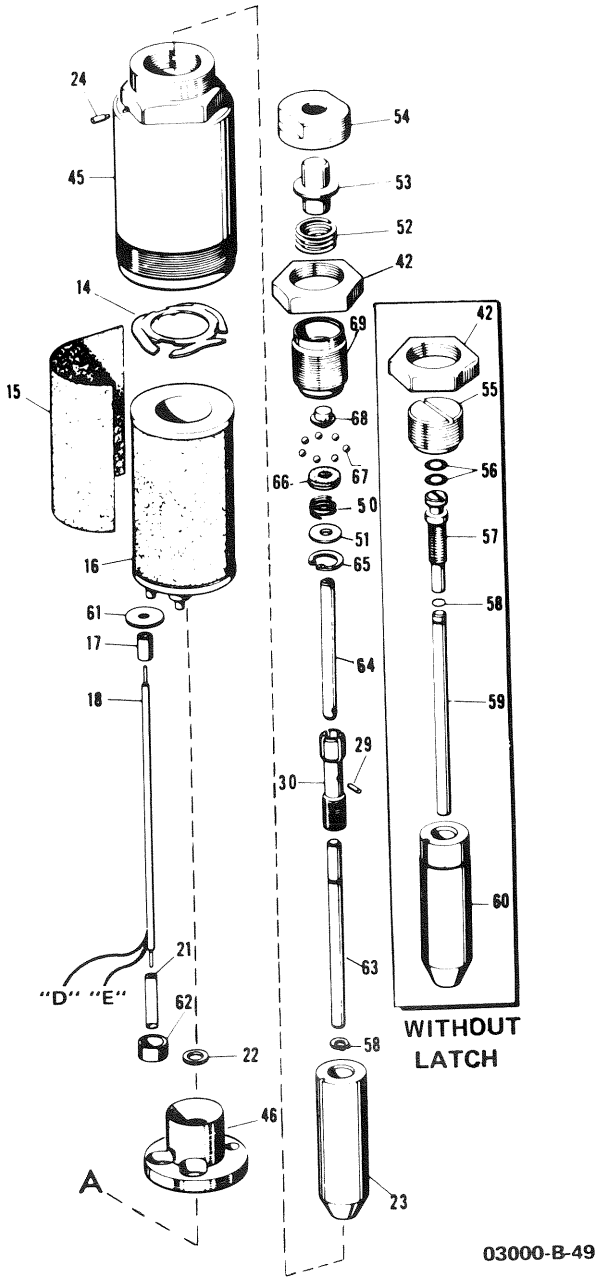

Figure 7. Energize to Shut Down with Latch

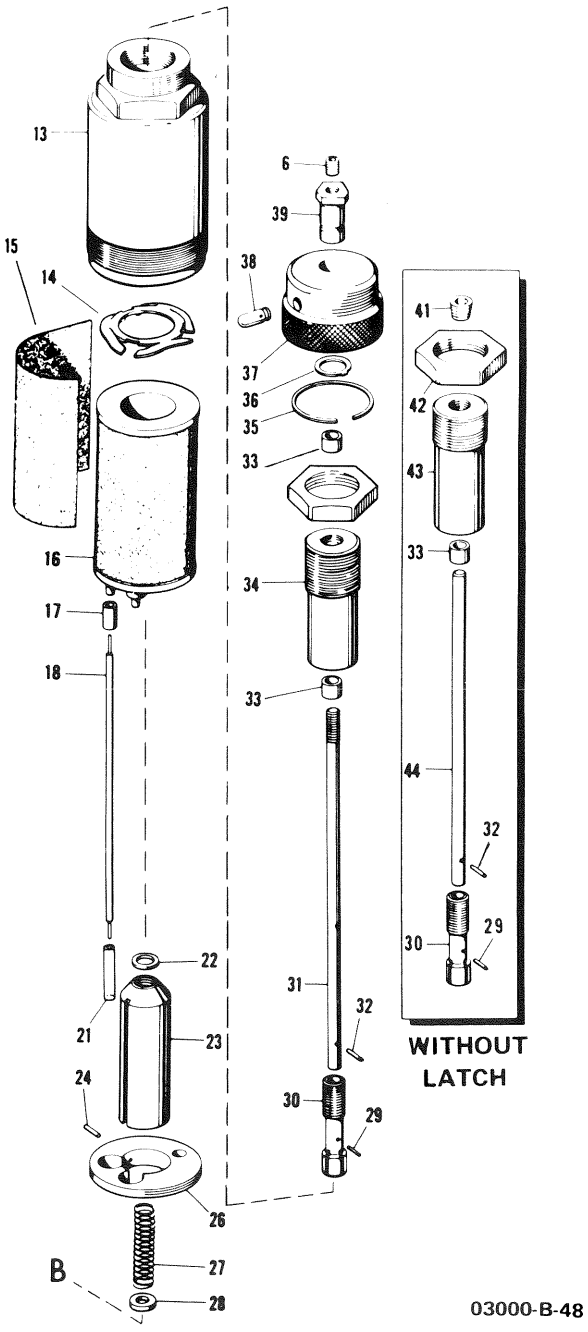

Figure 8. De-Energize to Shut Down with Latch

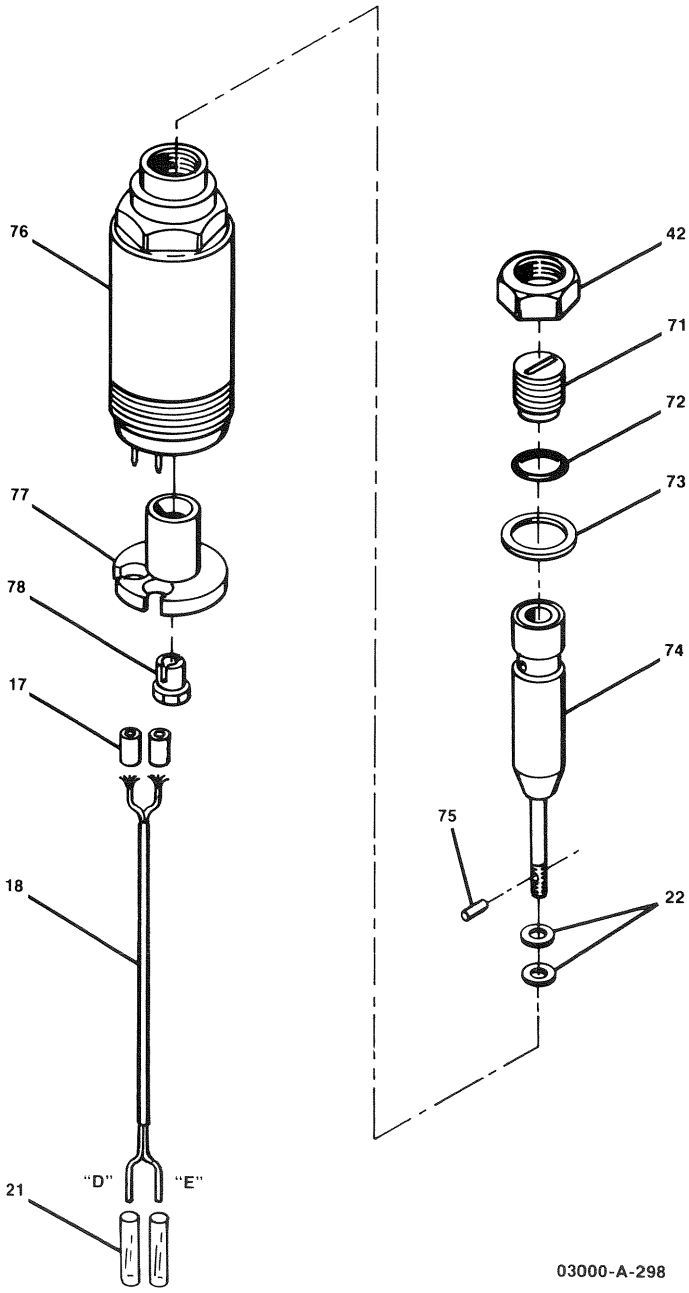

Figure 9. Vibration Resistant Energize to Shut Down, without Latch

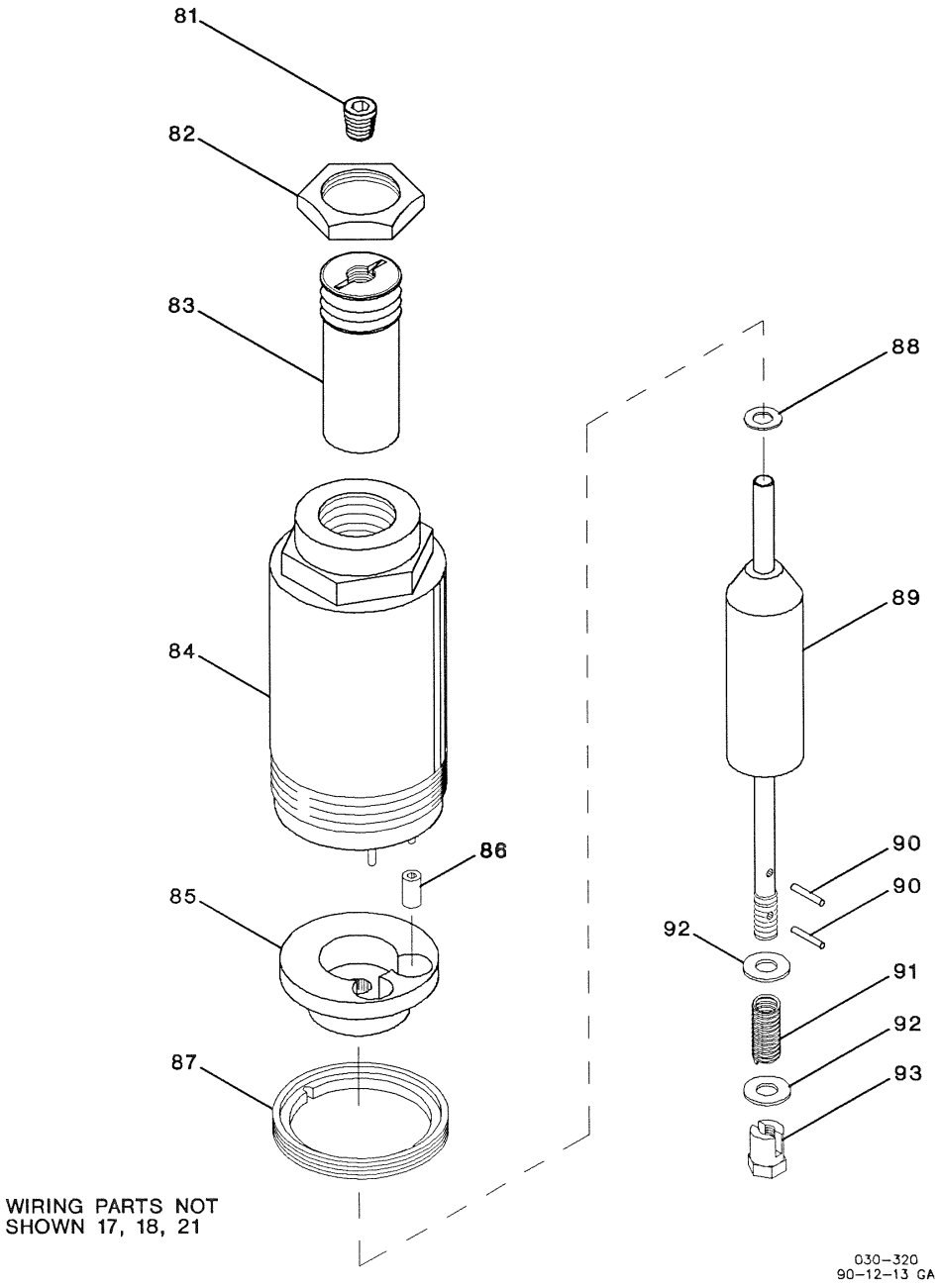

Figure 10. Vibration Resistant De-energize to Shut Down, with Latch

Chapter 3.
Service Options

Product Service Options

The following factory options are available for servicing Woodward equipment, based on the standard Woodward Product and Service Warranty (5-01-1205) that is in effect at the time the product is purchased from Woodward or the service is performed:

- Replacement/Exchange (24-hour service)
- Flat Rate Repair
- Flat Rate Remanufacture

If you are experiencing problems with installation or unsatisfactory performance of an installed system, the following options are available:

- Consult the troubleshooting guide in the manual.
- Contact Woodward technical assistance (see "How to Contact Woodward" later in this chapter) and discuss your problem. In most cases, your problem can be resolved over the phone. If not, you can select which course of action you wish to pursue based on the available services listed in this section.

Replacement/Exchange

Replacement/Exchange is a premium program designed for the user who is in need of immediate service. It allows you to request and receive a like-new replacement unit in minimum time (usually within 24 hours of the request), providing a suitable unit is available at the time of the request, thereby minimizing costly downtime. This is also a flat rate structured program and includes the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205).

This option allows you to call in the event of an unexpected outage, or in advance of a scheduled outage, to request a replacement control unit. If the unit is available at the time of the call, it can usually be shipped out within 24 hours. You replace your field control unit with the like-new replacement and return the field unit to the Woodward facility as explained below (see "Returning Equipment for Repair" later in this chapter).

Charges for the Replacement/Exchange service are based on a flat rate plus shipping expenses. You are invoiced the flat rate replacement/exchange charge plus a core charge at the time the replacement unit is shipped. If the core (field unit) is returned to Woodward within 60 days, Woodward will issue a credit for the core charge. [The core charge is the average difference between the flat rate replacement/exchange charge and the current list price of a new unit.]

Return Shipment Authorization Label. To ensure prompt receipt of the core, and avoid additional charges, the package must be properly marked. A return authorization label is included with every Replacement/Exchange unit that leaves Woodward. The core should be repackaged and the return authorization label affixed to the outside of the package. Without the authorization label, receipt of the returned core could be delayed and cause additional charges to be applied.

Flat Rate Repair

Flat Rate Repair is available for the majority of standard products in the field. This program offers you repair service for your products with the advantage of knowing in advance what the cost will be. All repair work carries the standard Woodward service warranty (Woodward Product and Service Warranty 5-01-1205) on replaced parts and labor.

Flat Rate Remanufacture

Flat Rate Remanufacture is very similar to the Flat Rate Repair option with the exception that the unit will be returned to you in "like-new" condition and carry with it the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205). This option is applicable to mechanical products only.

Returning Equipment for Repair

If a control (or any part of an electronic control) is to be returned to Woodward for repair, please contact Woodward in advance to obtain a Return Authorization Number. When shipping the item(s), attach a tag with the following information:

- name and location where the control is installed;
- name and phone number of contact person;
- complete Woodward part number(s) and serial number(s);
- description of the problem;
- instructions describing the desired type of repair.

CAUTION
To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual 82715, *Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules*.

Packing a Control

Use the following materials when returning a complete control:

- protective caps on any connectors;
- antistatic protective bags on all electronic modules;
- packing materials that will not damage the surface of the unit;
- at least 100 mm (4 inches) of tightly packed, industry-approved packing material;
- a packing carton with double walls;
- a strong tape around the outside of the carton for increased strength.

Return Authorization Number

When returning equipment to Woodward, please telephone and ask for the Customer Service Department [1 (800) 523-2831 in North America or +1 (970) 482-5811]. They will help expedite the processing of your order through our distributors or local service facility. To expedite the repair process, contact Woodward in advance to obtain a Return Authorization Number, and arrange for issue of a purchase order for the item(s) to be repaired. No work can be started until a purchase order is received.

NOTE

We highly recommend that you make arrangement in advance for return shipments. Contact a Woodward customer service representative at 1 (800) 523-2831 in North America or +1 (970) 482-5811 for instructions and for a Return Authorization Number.

Replacement Parts

When ordering replacement parts for controls, include the following information:

- the part number(s) (XXXX-XXX) that is on the enclosure nameplate;
- the unit serial number, which is also on the nameplate.

How to Contact Woodward

In North America use the following address when shipping or corresponding:

Woodward Governor Company
PO Box 1519
1000 East Drake Rd
Fort Collins CO 80522-1519, USA

Telephone—+1 (970) 482-5811 (24 hours a day)
Toll-free Phone (in North America)—1 (800) 523-2831
Fax—+1 (970) 498-3058

For assistance outside North America, call one of the following international Woodward facilities to obtain the address and phone number of the facility nearest your location where you will be able to get information and service.

Facility	Phone Number
Australia	+61 (2) 9758 2322
Brazil	+55 (19) 3708 4800
India	+91 (129) 523 0419
Japan	+81 (476) 93-4661
The Netherlands	+31 (23) 5661111

You can also contact the Woodward Customer Service Department or consult our worldwide directory on Woodward's website (**www.woodward.com**) for the name of your nearest Woodward distributor or service facility. [For worldwide directory information, go to **www.woodward.com/ic/locations**.]

Engineering Services

Woodward Industrial Controls Engineering Services offers the following after-sales support for Woodward products. For these services, you can contact us by telephone, by e-mail, or through the Woodward website.

- Technical Support
- Product Training
- Field Service

Contact information:

Telephone—+1 (970) 482-5811
Toll-free Phone (in North America)—1 (800) 523-2831
E-mail—icinfo@woodward.com
Website—**www.woodward.com/ic**

Technical Support is available through our many worldwide locations or our authorized distributors, depending upon the product. This service can assist you with technical questions or problem solving during normal business hours. Emergency assistance is also available during non-business hours by phoning our toll-free number and stating the urgency of your problem. For technical support, please contact us via telephone, e-mail us, or use our website and reference ***Customer Services*** and then ***Technical Support***.

Product Training is available at many of our worldwide locations (standard classes). We also offer customized classes, which can be tailored to your needs and can be held at one of our locations or at your site. This training, conducted by experienced personnel, will assure that you will be able to maintain system reliability and availability. For information concerning training, please contact us via telephone, e-mail us, or use our website and reference ***Customer Services*** and then ***Product Training***.

Field Service engineering on-site support is available, depending on the product and location, from one of our many worldwide locations or from one of our authorized distributors. The field engineers are experienced both on Woodward products as well as on much of the non-Woodward equipment with which our products interface. For field service engineering assistance, please contact us via telephone, e-mail us, or use our website and reference ***Customer Services*** and then ***Technical Support***.

Technical Assistance

If you need to telephone for technical assistance, you will need to provide the following information. Please write it down here before phoning:

General

Your Name_____
Site Location_____
Phone Number_____
Fax Number_____

Prime Mover Information

Engine/Turbine Model Number_____
Manufacturer_____
Number of Cylinders (if applicable)_____
Type of Fuel (gas, gaseous, steam, etc)_____
Rating_____
Application_____

Governor Information

Please list all Woodward governors, actuators, and electronic controls in your system:

Woodward Part Number and Revision Letter

_____

Control Description or Governor Type

_____

Serial Number_____

Woodward Part Number and Revision Letter

_____

Control Description or Governor Type

_____

Serial Number_____

Woodward Part Number and Revision Letter

_____

Control Description or Governor Type

_____

Serial Number_____

If you have an electronic or programmable control, please have the adjustment setting positions or the menu settings written down and with you at the time of the call.

We appreciate your comments about the content of our publications.

Send comments to: icinfo@woodward.com

Please include the manual number from the front cover of this publication.

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E-mail and Home Page—www.woodward.com

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**Woodward has company-owned plants, subsidiaries, and branches,
as well as authorized distributors and other authorized service and sales facilities throughout the world.**

Complete address/phone/fax/e-mail information for all locations is available on our website.

04/1/F